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New species of *Hypoaspis* Canestrini and *Coleolaelaps* Berlese (Mesostigmata: Laelapidae) associated with *Polyphylla olivieri* Castelnau (Coleoptera: Scarabaeidae) in Iran

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Abstract

White grubs, including *Polyphylla olivieri* Castelnau, are among the most economically important pests of orchard trees and other crops such as potato and sugar beet. The larvae feed on the roots of the host plants and their adults feed on the leaves. Several types of organisms are parasitic or phoretic on this pest, including three species of mites from Iran. Two new species of mites, namely *Hypoaspis* (*Hypoaspis*) *surii* **n. sp.** and *Coleolaelaps massoumii* **n. sp**. are described here from the adults of *P. olivieri* in Hamedan, Iran. *Hypoaspis polyphyllae* Khanjani & Ueckermann was previously described from the larva of this species of beetle.

Key words: Acari, *Coleolaelaps*, light trap, parasitic mites, phoresy, white grub, fruit pest

Introduction

The mite family Laelapidae includes many species that are ectoparasites of small mammals, birds, annelid worms, insects, and myriapods, as well as free-living soil predators in litter and moss (Evans & Till, 1979; Khanjani & Ueckermann, 2005; Faraji & Halliday, 2009; Krantz & Walter, 2009). Laelapids are associated with a variety of insect groups, including beetles of the family Scarabeidae, which they also use to disperse.

Members of the genus *Hypoaspis* Canestrini and related genera are predators that occur in soil, litter and moss (Evans & Till, 1979). Some of these species are used as biological control agents in greenhouse crops against the two spotted spider mites and thrips, in mushroom cultures against fungus gnats, and bulb mites such as *Rhizoglyphus* and *Tyrophagus* spp. (Enkegard *et al*. 1997; Lesna *et al*. 2000; Vanninen & Koskula 2004; Beaulieu, 2009). They can cause significant reductions in numbers of fungus gnats or flower thrips in crops (Beaulieu, 2009). Also *Hypoaspis calcuttaensis* Bhattacharya significantly reduced numbers of the root knot nematode, *Meloidogyne javanica* (Treub), a pest of okra (*Hibiscus esculentus*). *Hypoaspis rhinocerotis* Oudemans feeds on the eggs of the scarabeid *Oryctes rhinoceros* L., a serious pest of coconut palms. *Hypoaspis athiasae* Costa, originally associated with *O. monocerus* Oliver, from the Ivory Coast, fed on the eggs of *O. rhinoceros* (Costa, 1971; Gerson *et al*. 2003). Besides *Hypoaspis athiasae*, Costa (1971) described five more species collected from scarabaeid beetles from Israel, Ivory Coast and West Samoa. Khanjani & Ueckermann (2005) described *Hypoaspis polyphyllae* from *Polyphylla olivieri* Cast feeding on the roots of the black cherry.

Polyphylla olivieri (Scarabeidae) is a serious horticultural pest in the west of Iran. Its larvae cause serious damage to the roots of apple and cherry trees as well as potatoes, and the adults occasionally attack the leaves of apple and cherry trees. In this study, we describe two new mite species collected from the adults of *P. olivieri* – *Hypoaspis surii* **n. sp**. and *Coleolaelaps massoumii* **n. sp.**

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H. rhinocerotis Oudemans reduced the egg hatch of the coconut pest *Oryctes rhinoceros* by about 70%, and it was subsequently released on the Tokelau Island in the Pacific region to control this pest (Swan, 1974; Gerson *et al*. 2003). Khanjani & Ueckermann (2005) described *H. polyphyllae* from the larvae of white grub, *Polyphylla olivieri* Castelnau, which was feeding on the roots of the blackberry tree. Close examination showed droplets of haemolymph oozing out where the mites were attached to the larvae, suggesting that the mites were causing some injury to the larvae. *Polyphylla olivieri* is a serious pest of fruit and other trees world-wide (Khanjani & Ueckermann, 2005). The discovery of the two new mite species described here may add to the range of potential biological control agents against white grubs, when their biology and behaviour have been investigated in more detail.

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